

ABSTRACT OF THE DISCLOSURE

A sputtering apparatus for producing a mixed film having a stoichiometrically complete composition and a refractive index corresponding to a designed value
5 without reducing the film deposition rate, a mixed film produced by such sputtering apparatus and a multilayer film including the mixed film are provided.

A sputtering apparatus 100 comprising a vacuum chamber 1, a cylindrical substrate holder 9 supported
10 rotatably in the vacuum chamber and a substrate 10 mounted on an outer periphery of the substrate holder wherein the vacuum chamber 1 includes a first film deposition area A and a second film deposition area B for deposition of a film on the substrate, the first film
15 deposition area A includes a first sputtering source 35 and a first plasma generator 51, and the second film deposition area B includes a second sputtering source 36 and a second plasma generator 52, and the first sputtering source 35 and the first plasma generator 51
20 are physically isolated from each other and the second sputtering source 36 and the second plasma generator 52 are physically isolated from each other.